

REMARKS

Prior to examination of the above-referenced case on the merits,
please enter the following amendments and consider the following remarks:

Applicant respectfully requests reconsideration of this application as
amended. Claims 1-9 are pending in the application. Claims 1-9 have been
amended. Claims 10-84 have been added. No claims have been canceled.

Please charge any shortages and credit any overcharges to our
Deposit Account No. 02-2666.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Dated: 9/18/02



Michael J. Mallie
Attorney for Applicant
Registration No. 36,591

12400 Wilshire Boulevard
Seventh Floor
Los Angeles, CA. 90025-1026

(408) 720-8598

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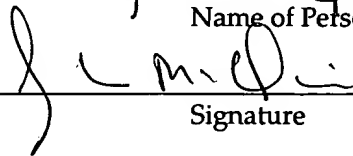
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VERSION WITH MARKINGS TO SHOW CHANGES MADE

1 1. (Amended) A method comprising:
2 monitoring [end-to-end] performance of a network application at
3 a [an application] demarcation point in a network; and
4 determining a location of a performance problem associated with
5 the network application identified as a result of monitoring performance,
6 the location being with respect to the demarcation point [mediating
7 between provider infrastructure and customer infrastructure based on
8 results of monitoring].

1 2. (Amended) The method defined in Claim 1 further
2 comprising [wherein] mediating between infrastructure of the network
3 managed by the source provider and customer-managed infrastructure
4 of the network [customer infrastructures comprises mediating between
5 performance impacts of underlying service layers and service
6 boundaries].

1 3. (Amended) The method defined in Claim 1 further
2 comprising mediating between a local area network (LAN) infrastructure
3 of the network and wide area network (WAN) infrastructure of the
4 network [developing service level agreements underlying with a service
5 boundary].

1 4. (Amended) The method defined in Claim 1 wherein
2 monitoring performance of the network application comprises

3 measuring end-to-end performance of the network application with
4 respect to the network [end-to-end performance of the network
5 application comprises measuring performance of the network
6 application].

1 5. (Amended) The method defined in Claim 1 [4] wherein
2 monitoring performance of the network application comprises
3 measuring at least one of quantitative and qualitative performance of the
4 network application [further comprising measuring latency, inbound and
5 outbound provider network delay, and inbound and outbound customer
6 network delay].

1 6. (Amended) The method defined in Claim 1 [4] wherein
2 monitoring performance of the network application comprises
3 measuring congestion [further comprising diagnosing a problem based
4 on the measurements].

1 7. (Amended) The method defined in Claim 6 [4] wherein
2 measuring congestion includes identifying a class of traffic being affected
3 [performance of the network application comprises measuring both
4 quantitative performance of the network application].

1 8. (Amended) The method defined in Claim 1 wherein
2 monitoring performance comprises measuring network availability
3 [further comprising determining from where a service effecting problem
4 is emanating in the network].

1 9. (Amended) The method defined in Claim 1 wherein the
2 performance problem comprises discarding packets [further comprising
3 a service provider creating, monitoring, and managing service level
4 agreements for a delivered end-to-end service delivered which traverses
5 its infrastructure in the network].

1 Please add the following claims:

1 10. (New) The method defined in Claim 1 wherein the
2 performance problem comprises retransmission that slows overall
3 response time.

1 11. (New) The method defined in Claim 1 further comprising:
2 comparing congestion index values over time.

1 12. (New) The method defined in Claim 11 further comprising
2 identifying the problem based on a ratio of the congestion index on a
3 provider-controlled portion of the network versus the congestion index on a
4 customer-controlled portion of the network being different.

1 13. (New) The method defined in Claim 11 further comprising
2 identifying the problem based on a change in a ratio of the congestion index
3 on a provider-controlled portion of the network versus the congestion index
4 on a customer-controlled portion of the network being different.

1 14. (New) The method defined in Claim 11 further comprising
2 identifying the problem based on a same amount of change occurring in the
3 congestion index values on a provider-controlled portion of the network and
4 a customer-controlled portion of the network.

1 15. (New) The method defined in Claim 1 further comprising:
2 measuring congestion index values; and
3 detecting variances in the congestion index values over time for a
4 network time period;
5 and
6 identifying the problem based on detected variances in the congestion
7 index.

1 16. (New) The method defined in Claim 1 further comprising:
2 measuring congestion index values;
3 detecting variances in the congestion index over time between
4 different types of traffic; and
5 identifying the problem based on detected variances in the congestion
6 index.

1 17. (New) The method defined in Claim 1 further comprising:
2 comparing measurement values over time.

1 18. (New) The method defined in Claim 17 further comprising
2 identifying a problem based on a ratio of a measurement value on a
3 provider-controlled portion of the network versus a measurement value on a
4 customer-controlled portion of the network being different.

1 19. (New) The method defined in Claim 17 further comprising
2 identifying a problem based on a change in a ratio of a measurement value
3 on a provider-controlled portion of the network versus a measurement value
4 on a customer-controlled portion of the network being different.

1 20. (New) The method defined in Claim 17 further comprising
2 identifying a problem based on change in measurement values on a
3 provider-controlled portion of the network and a customer-controlled
4 portion of the network, where the change is by the same amount.

1 21. (New) The method defined in Claim 1 further comprising:
2 generating measurement values; and
3 detecting variances in the measurement values over time for a
4 network time period.

1 22. The method defined in Claim 1 further comprising:
2 generating measurement values; and

3 detecting variances in the measurement values over time for different
4 types of traffic.

1 23. (New) The method defined in Claim 1 wherein monitoring
2 performance of the network application comprises characterizing
3 performance of the network application using one or more metrics.

1 24. (New) The method defined in Claim 23 wherein the one or
2 more metrics comprises a delay metric characterizing delay associated
3 with end-to-end traffic in the network.

1 25. (New) The method defined in Claim 23 wherein the one or
2 more metrics comprises a server delay metric characterizing delay of a
3 server in responding to a request associated with the network
4 application.

1 26. (New) The method defined in Claim 23 wherein the one or
2 more metrics comprises packet counts and data rates.

1 27. (New) The method defined in Claim 23 wherein the one or
2 more metrics comprises frame relay counts.

1 28. (New) The method defined in Claim 1 further comprising:
2 monitoring customer network delay; and
3 monitoring provider network delay.

1 29. (New) The method defined in Claim 28 wherein a network
2 device at the demarcation point monitors the customer network delay
3 and the provider network delay as half round trip delays.

1 30. (New) The method defined in Claim 28 wherein the
2 network device monitors inbound and outbound customer network
3 delays associated with operation of the network application, inbound
4 and outbound provider network delays associated with operation of the
5 network application, and host latency associated with operation of the
6 network application, and combines results of monitoring to create an
7 indication of the delay associated with using the network application in
8 the network.

1 31. (New) A method comprising:
2 providing a demarcation point with respect to a network application
3 provided by a provider in a network; and
4 employing at least one service-level agreement between the provider
5 of the network application and a customer with responsibility for
6 management of performance problems associated with the network
7 application based on the demarcation point.

1 32. (New) The method defined in Claim 31 further comprising:
2 monitoring compliance with the at least one service-level agreement;
3 and

4 sending a notification if the service-level agreement is in one
5 condition of a group consisting of the service-level agreement is being
6 violated or the service-level agreement is within a threshold of being
7 violated.

1 33. (New) A method comprising:
2 a network device collecting data related to operation of a network
3 application at an demarcation point in a network on behalf of a provider;
4 and
5 the provider using the data collected at the demarcation point to
6 determine whether a problem associated with the operation of the network
7 application is a responsibility of the provider.

1 34. (New) The method defined in Claim 33 wherein the provider
2 uses data collected at the demarcation point to correct an identified problem
3 in the network.

1 35. (New) The method defined in Claim 33 wherein the provider
2 uses data collected at the demarcation point to indicate to a user a need for
3 an additional resource.

1 36. (New) The method defined in Claim 35 wherein the additional
2 resource comprises additional bandwidth.

1 37. (New) The method defined in Claim 33 wherein the additional
2 resource comprises additional server capacity.

1 38. (New) The method defined in Claim 33 wherein the provider
2 uses data collected at the demarcation point to identify a service to offer to a
3 customer.

1 39. (New) A network device for use at a demarcation point in a
2 network, the network device comprising:
3 a measurement engine to take measurements at the demarcation
4 point and record information indicative of delays occurring in the network,
5 the measurement engine to generate a measurement value in response to the
6 information regarding delays;
7 a memory coupled to the management engine to store the information
8 indicative of the delays occurring in the network, including the
9 measurement value; and
10 management control coupled to the memory to access the information
11 indicative of the delays occurring in the network and to determine if a
12 problem exists in the network that is a responsibility of a service provider.

1 40. (New) The network device defined in Claim 39 wherein the
2 measurement engine performs measurements with respect to at least one of
3 a group that includes network delays, server delays, bits per second, lost
4 packets, retransmission counts, end-to-end delays.

1 41. (New) The network device defined in Claim 39 wherein the
2 management control notifies the service provider about the problem.

1 42. (New) The network device defined in Claim 39 wherein the
2 measurement engine records times associated with encountering packets
3 and acknowledgement of the packets to generate a measurement value.

1 43. (New) The network device defined in Claim 39 wherein
2 the measurement engine monitors performance of the network
3 application comprises measuring end-to-end performance of the network
4 application with respect to the network.

1 44. (New) The network device defined in Claim 39 wherein
2 the measurement engine monitors performance of the network
3 application comprises measuring quantitative performance of the
4 network application.

1 45. (New) The network device defined in Claim 39 wherein
2 the measurement engine monitors performance of the network
3 application comprises measuring congestion.

1 46. (New) The network device defined in Claim 45 wherein
2 the measurement engine measures congestion includes identifying a
3 class of traffic being affected in order to solve a customer problem or
4 provide a service to a customer to address the problem.

1 47. (New) The network device defined in Claim 39 wherein
2 the measurement engine monitors performance comprises measuring
3 network availability.

1 48. (New) The network device defined in Claim 39 wherein
2 the performance problem comprises discarding packets.

1 49. (New) The network device defined in Claim 39 wherein
2 the performance problem comprises retransmission that slows overall
3 response time.

1 50. (New) The network device defined in Claim 39 wherein the
2 management control compares congestion index values over time.

1 51. (New) The network device defined in Claim 50 wherein the
2 management control identifies the problem based on a ratio of the

3 congestion index on a provider-controlled portion of the network versus the
4 congestion index on a customer-controlled portion of the network being
5 different.

1 52. (New) The network device defined in Claim 50 wherein the
2 management control identifies the problem based on a change in a ratio of
3 the congestion index on a provider-controlled portion of the network versus
4 the congestion index on a customer-controlled portion of the network being
5 different.

1 53. (New) The network device defined in Claim 50 wherein the
2 management control identifies the problem based on a same amount of
3 change occurring in the congestion index values on a provider-controlled
4 portion of the network and a customer-controlled portion of the network.

1 54. (New) The network device defined in Claim 38 wherein the
2 measurement engine measures congestion index values, and the
3 management control detects variances in the congestion index values over
4 time for a network time period and identifies the problem based on detected
5 variances in the congestion index.

1 55. (New) The network device defined in Claim 38 wherein the
2 measurement engine measures congestion index values, and the
3 management control detects variances in the congestion index over time
4 between different types of traffic and identifies the problem based on
5 detected variances in the congestion index.

1 56. (New) The network device defined in Claim 38 wherein the
2 management control compares measurement values over time.

1 57. (New) The network device defined in Claim 56 wherein the
2 management control identifies a problem based on a ratio of a measurement
3 value on a provider-controlled portion of the network versus a measurement
4 value on a customer-controlled portion of the network being different.

1 58. (New) The network device defined in Claim 56 wherein the
2 management control identifies a problem based on a change in a ratio of a
3 measurement value on a provider-controlled portion of the network versus a
4 measurement value on a customer-controlled portion of the network being
5 different.

1 59. (New) The network device defined in Claim 56 wherein the
2 management control identifies a problem based on change in measurement

3 values on a provider-controlled portion of the network and a customer-
4 controlled portion of the network, where the change is by the same amount.

1 60. (New) The network device defined in Claim 38 wherein the
2 measurement engine generates measurement values, and the management
3 control detects variances in the measurement values over time for a network
4 time period.

1 61. (New) The network device defined in Claim 38 wherein the
2 measurement engine generates measurement values, and the management
3 control detects variances in the measurement values over time for different
4 types of traffic.

1 62. (New) The network device defined in Claim 38 wherein
2 the measurement engine characterizes performance of the network
3 application using one or more metrics.

1 63. (New) The network device defined in Claim 62 wherein
2 the one or more metrics comprises a delay metric characterizing delay
3 associated with end-to-end traffic in the network.

1 64. (New) The network device defined in Claim 62 wherein
2 the one or more metrics comprises a server delay metric characterizing

3 delay of a server in responding to a request associated with the network
4 application.

1 65. (New) The network device defined in Claim 62 wherein
2 the one or more metrics comprises packet counts and data rates.

1 66. (New) The network device defined in Claim 62 wherein
2 the one or more metrics comprises frame relay counts.

1 67. (New) The network device defined in Claim 38 wherein
2 the measurement engine monitors customer network delay and provider
3 network delay.

1 68. (New) The network device defined in Claim 67 wherein
2 the measurement engine monitors the customer network delay and the
3 provider network delay as half round trip delays.

1 69. (New) The network device defined in Claim 38 wherein
2 the measurement monitors inbound and outbound customer network
3 delays associated with operation of the network application, inbound
4 and outbound provider network delays associated with the operation of
5 the network application, and host latency associated with the operation
6 of the network application, and wherein the management control
7 combines results of monitoring to create an indication of the delay
8 associated with using the network application in the network.

1 70. (New) The network device defined in Claim 38 further
2 comprising
3 a classification engine to classify traffic in a traffic flow on the
4 network;
5 a response time block to monitor response time; and
6 a shaping block to shape traffic, wherein the measurement engine is
7 communicatively coupled to the classification engine, the response time
8 block, and the shaping block to obtain information to create measurements.

1 71. (New) An architecture comprising:
2 a network device for use in a network at a demarcation point, the
3 network device comprising
4 a measurement engine to take measurements at the
5 demarcation point and record information indicative of delays
6 occurring in the network, the measurement engine to generate a
7 measurement value in response to the information regarding delays,
8 a memory coupled to the management engine to store the
9 information indicative of the delays occurring in the network,
10 including the measurement value, and
11 management control coupled to the memory to access the
12 information indicative of the delays occurring in the network and to

13 determine if a problem exists in the network that is the responsibility
14 of an application service provider;
15 a service provider communicatively coupled to the network device
16 via the network, wherein the service provider and management control of
17 the network device communicate between each other regarding a problem
18 associated with operation of the network application.

1 72. (New) The network architecture defined in Claim 71 wherein
2 the management control notifies the service provider that the problem exists
3 and the service provider sends an event to address the problem.

1 73. (New) The network architecture defined in Claim 72 wherein
2 the service provider sends an event to fix the problem.

1 74. (New) The network architecture defined in Claim 72 wherein
2 the service provider sends an event to alleviate the problem.

1 75. (New) The network architecture defined in Claim 74 wherein
2 the network device shapes traffic in response to the event.

1 76. (New) The network architecture defined in Claim 75 wherein
2 the network device shapes traffic by controlling non-essential traffic.

1 77. (New) The network architecture defined in Claim 71 wherein
2 the network device further comprises:
3 a classification engine to classify traffic in a traffic flow on the
4 network;
5 a response time block to monitor response time; and
6 a shaping block to shape traffic, wherein the measurement engine is
7 communicatively coupled to the classification engine, response time block,
8 and the shaping block to obtain information to create measurements by
9 which to identify the problem with the operation of the network application.

1 78. (New) The network architecture defined in Claim 71 wherein
2 the service provider sends an event to the network device for notification of
3 the problem.

1 79. (New) The network architecture defined in Claim 71 wherein
2 the service provider allocates additional bandwidth in response to
3 notification of the problem.

1 80. (New) The network architecture defined in Claim 71 wherein
2 the network device records times associated with encountering packets and
3 acknowledgement of the packets to generate a measurement value.

1 81. (New) The network architecture defined in Claim 71 wherein
2 the network device records the sequence number of each of a plurality of
3 packets and a time each of the plurality of packets reached the application
4 layer demarcation point.

1 82. (New) The network architecture defined in Claim 71 wherein
2 the measurement engine performs measurements based on whether a
3 sequence number associated with an acknowledgement is equal to a
4 sequence number of one of the previously recorded packets and the
5 acknowledgement is a naked acknowledgement, and wherein the
6 management control calculates a difference between the time the
7 acknowledgement is at the demarcation point and the time that the data
8 packet is originally seen at the demarcation point.

1 83. (New) The network architecture defined in Claim 71 further
2 comprising a customer data center coupled to a network device.

1 84. (New) The network architecture defined in Claim 83
2 wherein the customer data center is coupled to a network device via a
3 local area network.